IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Rajender Kumar Potlapally, et al. Confirmation No.: 3144

Serial No.: 10/507,399 Case No.: DRF 3.3-010

Filed: June 13, 2005 Examiner: Tamthom Ngo Truong

Art Unit: 1624

For: NOVEL CRYSTALLINE FORM OF 5-[4-[[3-METHYL-4-OXO-3,4- DIHYDROQUINAZOLIN-2-YL]METHOXY]BENZYL]THIAZOLIDINE-2,4-DIONE POTASSIUM SALT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT AND REQUEST FOR CONTINUED EXAMINATION

UNDER 37 C.F.R §1.114

This amendment is filed in response to the Office Action mailed January 29, 2007. Please consider this amendment a submission pursuant to 37 CFR 1.114. In addition, please provide a three-month Extension of Time up to and including July 29, 2007 to answer the Office Action as provided for in 37 CFR 1.136. Please charge $2410.00 to Deposit Account 50-4237, which includes $1,020 for the Extension of Time; $790 for the Request for Continued Examination, and $600.00 for new claims.

If any additional fees for the accompanying response are required, Applicants request that this be considered a Petition therefore. The Commissioner is hereby authorized to charge any additional fees that may be required to Deposit Account 50-4237.

Amendments to the claims begin on page 2 of this response.

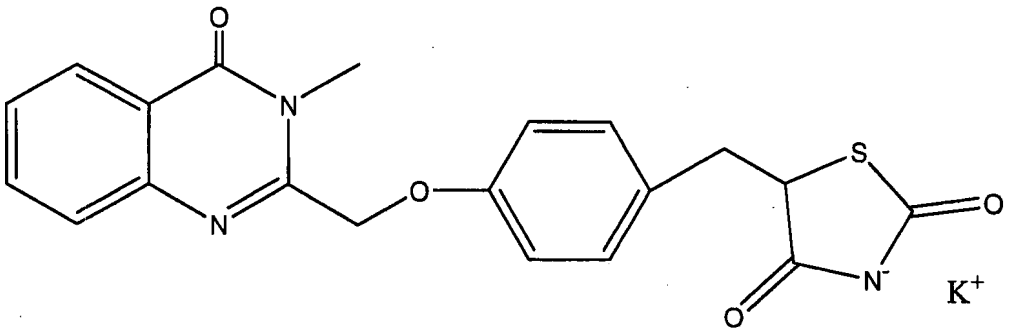
Remarks begin on page 11

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

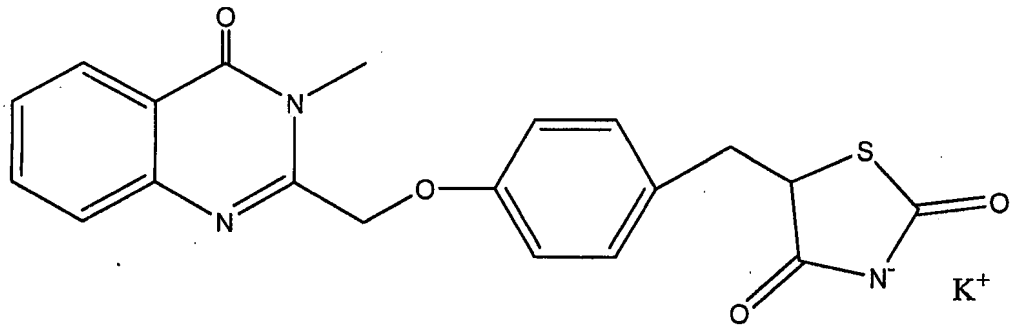
1-33. (Canceled)

34. (New) A crystalline Form of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl-]methoxy]benzyl]thiazolidine-2,4-dione potassium salt, having the formula:



, wherein the crystalline compound is characterized by having an x-ray powder diffraction pattern comprising one or more peaks expressed in degrees 2θ that are selected from the group consisting of 6.20, 9.34, 12.16, 12.48, 18.26, 18.80, 24.02, 24.46, 26.70, 27.02, 27.48, and 30.86 ± about 0.1.

35. (New) A crystalline Form-I of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl-]methoxy]benzyl]thiazolidine-2,4-dione potassium salt, having the formula:



, wherein the crystalline compound is characterized by having an x-ray powder diffraction pattern comprising one or more peaks expressed in degrees 2θ that are selected from the group consisting of 6.44, 7.42, 9.28, 10.76, 11.24, 16.16, 18.60, 25.06, 28.42, and 30.40 ± about 0.1.

36. (New) The crystalline Form-I of claim 35, wherein said compound comprises two or more of said x-ray powder diffraction peaks.

37. (New) The crystalline Form-I of claim 35, wherein said compound comprises three or more of said x-ray powder diffraction peaks.

38. (New) The crystalline Form-I of claim 35, wherein said compound comprises four or more of said x-ray powder diffraction peaks.

39. (New) The crystalline Form-I of claim 35, wherein said compound comprises five or more of said x-ray powder diffraction peaks.

40. (New) The crystalline Form-I of claim 35, wherein said compound comprises six or more of said x-ray powder diffraction peaks.

41. (New) The crystalline Form-I of claim 35, wherein said compound comprises seven or more of said x-ray powder diffraction peaks.

42. (New) The crystalline Form-I of claim 35, wherein said compound comprises eight or more of said x-ray powder diffraction peaks.

43. (New) The crystalline Form-I of claim 35, wherein said compound comprises nine or more of said x-ray powder diffraction peaks.

44. (New) The crystalline Form-I of claim 35, wherein said compound comprises all of said x-ray powder diffraction peaks.

45. (New) The crystalline Form-I of claim 35, further including a peak at 15.06 ± 0.1.

46. (New) The crystalline Form-I of claim 35, wherein said x-ray powder diffraction is measured by using copper K α radiation.

47. (New) The crystalline Form-I of claim 35 having differential scanning calorimetry endotherms at 301.17° C and 311.82° C.

48. (New) The crystalline Form-I of claim 35 having a differential scanning calorimetry exotherm at 297.68° C.

49. (New) The crystalline Form-I of claim 35 having differential scanning calorimetry endotherms at 301.17° C and 311.82° C, and an exotherm at 297.68° C.

50. (New) The crystalline Form-I of claim 35, having an infrared absorption spectrum with one or more peaks selected from the group consisting of 503.9, 559.7, 609.7, 658.8, 609.7, 701.3, 772.9, 809.7, 1035.7, 1058.4, 1271.9, 1329.7, 1378.5, 1426, 1477.6, 1511.8, 1591.5, 1675.4, 1861.9, 3039.1, and 3442.9 cm^{-1}.

51. (New) The crystalline Form-I of claim 35, wherein said compound comprises all of said x-ray powder diffraction peaks, and comprises

differential scanning calorimetry endotherms at 301.17° C and 311.82° C and an exotherm at 297.68° C, and

an infrared absorption spectrum including peaks at 503.9, 559.7, 609.7, 658.8, 609.7, 701.3, 772.9, 809.7, 1035.7, 1058.4, 1271.9, 1329.7, 1378.5, 1426, 1477.6, 1511.8, 1591.5, 1675.4, 1861.9, 3039.1, and 3442.9 cm^{-1}.

52. (New) The crystalline Form-I of claim 35, wherein said crystalline Form-I is substantially free of other amorphous forms.

53. (New) The crystalline Form-I of claim 35, wherein said crystalline Form-I is substantially free of peak angles that correspond to other polymorphic forms.

54. (New) The crystalline Form-I of clam 35, wherein said crystalline Form-I is substantially free of peak angles that include 6.20, 12.16, 12.48, 18.26, 24.02, 24.46, 26.70, 27.02, 27.48, and 30.86 .

55. (New) The crystalline Form-I of claim 35, which is substantially phase pure.

56. (New) A pharmaceutical composition comprising the crystalline Form-I of claim 35 and a pharmaceutically acceptable carrier.

57. (New) A method of treating diabetes or diabetic complications, comprising administering the composition of claim 56 to a patient.

58. (New) A process for preparing the crystalline Form-I of claim 35 comprising:

(i) dissolving 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]methoxy]benzyl]thiazolidine-2,4-dione in an organic solvent, and heating to a temperature of about 60-75° C;

(ii) at a temperature of 40-55° C, adding potassium tertiary butoxide dissolved in an organic solvent to the solution of step (i);

(iii) cooling the reaction mixture to about room temperature; and

(iv) recovering the crystalline form of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]methoxy]benzyl]thiazolidine-2,4-dione potassium salt.

59. (New) The process of claim 58, wherein the organic solvent of step (i) is selected from methanol, a mixture of methanol and xylene, a mixture of acetone and xylene, ethanol, isopropanol, ethyl acetate, diethyl ketone, and methyl isobutyl ketone.

60. (New) The process of claim 58, wherein the organic solvent of step (i) is a mixture of methanol and xylene.

61. (New) A process for preparing the crystalline Form-I of claim 35 comprising:

(i) dissolving 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]methoxy]benzyl]thiazolidine-2,4-dione in an organic solvent, at room temperature;

(ii) at about room temperature, adding potassium tertiary butoxide dissolved in an organic solvent to the solution of step (i); and

(iii) recovering the crystalline form of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]methoxy]benzyl]thiazolidine-2,4-dione potassium salt.

62. (New) The process of claim 61, wherein the organic solvent of step (i) is selected from dimethylformamide, 1,4-dioxane, or a mixture of 1,4-dioxane and xylene.

63. (New) A process for preparing the crystalline Form-I of claim 35 comprising:

(i) dissolving 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]methoxy]benzyl]thiazolidine-2,4-dione potassium salt in dimethylsulfoxide and heating to a temperature about 50-80° C;

(ii) storing the solution at room temperature for about 1-8 weeks; and

(iii) recovering the crystalline form of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]-methoxy]benzyl]thiazolidine-2,4-dione potassium salt.

Remarks

Applicants respectfully request favorable reconsideration in view of the following remarks.

Amendments

Applicants request that claims 16 through 33 be cancelled without prejudice or disclaimer in an effort to expedite prosecution. Claims 1 through 15 were previously cancelled. Applicants respectfully request the addition of new claims 34 through 63.

Support for new claim 34 may be found, for example, in currently cancelled claim 18. Support for new claims 35-46 may be found, for example, in originally filed claim 3. Support for new claim 47 may be found, for example, on page 5 of the originally filed application. Support for new claims 48-50 may be found, for example, in currently cancelled claim 20. Support for new claim 51 may be found, for example, in currently cancelled claim 21. Support for new claim 52 may be found, for example, in currently cancelled claims 20, 21, 22 and originally filed claim 3. Support for new claims 53-56 may be found, for example, in Figure 4 of Patent Application No.180/MAS/2002, to which the present application claims priority. Support for new claims 57 and 58 may be found, for example, in currently cancelled claims 28 and 30. Support for new claims 59-63 may be found, for example, in currently cancelled claims 23-27.

New claim 34 and 35 have also been amended to reflect that the angles of each peak may vary by about ± 0.1. One skilled in the art would understand that this variation is inherent in diffractometers, e.g., the Rigaku D/Max model diffractometer disclosed on page 5, lines 22-24 of the application as filed, and may be attributable to slight variations in the disclosed diffraction procedures resulting from machine calibration, settings, etc., and from variations from instrument to instrument and operator to operator. Applicants also note that currently cancelled claim 22 contained a typographical error in Applicants' Response of October 5, 2006. The listing of X-ray diffraction peaks recited in claim 22 in Applicants' Response of October 5, 2006 mistakenly omitted several X-ray diffraction peaks. This typographical error was made without any deceptive intent and should in no way be construed as a disclaimer. Applicants have corrected this typographical error in the listing of new claims, e.g., new claims 34-63.

Applicants submit that the new claims do not introduce new matter. As such, new claims 34 through 63 are pending.

Initially, Applicants would like to clarify that the claimed invention is directed to two crystalline polymorphs of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl-]methoxy]benzyl]thiazolidine-2,4-

dione potassium salt. The first crystalline structure is Form, which is the subject of new claim 34. The second crystalline structure is Form-I, which is the subject of new claims 35-63.

Applicants submit, as set forth in the application as filed and as indicated by the reference, that no crystalline form of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl-]methoxy]benzyl]thiazolidine-2,4-dione potassium salt was known prior to the present invention, and that no polymorphs of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl-]methoxy]benzyl]thiazolidine-2,4-dione potassium salt were known prior to the present invention. Form and Form-I have novel and nonobvious crystalline structures as indicated by their x-ray diffractometry, differential scanning calorimetry, and infra red spectroscopy. Applicants respectfully submit that differences various solid-state forms of a compound, can translate into patentable differences in biological activity and efficacy.

35 U.S.C. §102

Claims 16-18, 20-24 and 28-33 were rejected under 35 U.S.C. §102 as allegedly inherently anticipated by Chebiyyam, et al. (WO 00/15638; "Chebiyyam"). Applicants respectfully traverse thisrejections. Applicants have currently cancelled claims 16-18, 20-24 and 28-33 in an effort to expedite prosecution and believe the cancellation of these claims renders the Office's rejections moot. Applicants will, however, address the Office's rejections to the extent that those rejections apply to the newly added claims in an effort to further expedite prosecution.

In support of its anticipation rejections the Office states (emphasis added by Applicants):

> In Example 40, Chebiyyam et al. describes a process of making the potassium salt of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl-]methoxy]benzyl]thiazolidine-2,4-dione (or Glitazone). The disclosed process reads on the process recited in the instant claim 23 with solvent of xylene:MeOH, heating at temperature ~ 80°C, and potassium t-butoxide added. Because the disclosed process is **similar** to the claimed process, it is presumed that the same crystal (as recited in claims 16-18 and 20-22) would be obtained.

Thus, it appears that the Office's anticipation rejections of claims directed to crystalline Form and crystalline Form-I are based on a superficial similarity between Chebiyyam's Example 40 and Applicants' claim 23, which is directed to a process of making crystalline Form-I. Applicants respectfully submit that "similarity" between a reference and a claimed invention is insufficient to establish anticipation. Applicants believe it is well established that "[a]nticipation requires the presence in a single prior art reference disclosure of every element of the claimed invention." *Great Northern Corp. v. Davis Core & Pad. Co., Inc.*, 228 U.S.P.Q. 356, 358 (Fed. Cir. 1986).

Currently cancelled claim 23 recites *heating to a temperature of about 60-75°C* and recites *adding potassium tertiary butoxide at a temperature of 40-55°C*. Chebiyyam's Example 40 fails to disclose or suggest either of these limitations. For at least these reasons, Applicants respectfully submit that Chebiyyam does not anticipate currently cancelled claim 23 or newly added claim 59 having similar limitations.

Further, it is well settled that "if the prior art of record fails to disclose or render obvious a method for making a claimed compound, at the time the invention was made, it may not be legally concluded that the compound itself is in the possession of the public." *In re Hoeksema*, 158 USPQ 596, 601 (CCPA 1968). Applicants respectfully submit that because Chebiyyam does not anticipate or suggest the process of currently cancelled claim 23, Chebiyyam cannot be presumed to anticipate the claimed crystalline Form or the claimed crystalline Form-I. For at least this reason, Applicants request favorable reconsideration of new claims.

Applicants also respectfully disagree with the Office's use of Chebiyyam's *single process* of Example 40 to allege anticipation of *both* Form and Form-I. As set forth in the specification and in the claims, crystalline Form and crystalline Form-I are made by difference processes. Applicants do not believe that a single process can be used to anticipate both Form and Form-I, and request favorable reconsideration on these grounds.

Chebiyyam also fails to provide other limitations of the claimed invention. For example, regarding currently cancelled claim 25, Applicants respectfully submit that Chebiyyam's Example 40 fails to disclose, inter alia, the recited *dissolving at room temperature*. Chebiyyam explicitly discloses that dissolving is performed at 80-90°C. For at least this reason, Applicants respectfully submit that Chebiyyam does not anticipate currently cancelled claim 25, or new claims 58-63 having similar limitations.

Applicants also respectfully submit that the Office has not met its burden in alleging *inherency*. In Applicants' Response of October 5, 2007, Applicants emphasized that the Board of Patent Appeals in *Ex parte Havens* did not consider a salt to render a new crystal form inherently anticipated. The Office responded that *Ex parte Havens* "is an unpublished decision, and thus cannot serve as legal precedent." The Board's decision in *Ex Parte Havens* was based on *Ex parte Skinner*, 2 USPQ 2d 1788 (Bd. Pat. App. Int. 1986), which Applicants respectfully submit is legal precedent. In *Ex parte Skinner*, the Board held that **when inherent properties of a prior art product are at issue, "the examiner must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the**

functional limitation is an inherent characteristic of the prior art" before the burden is shifted to the applicant to disprove inherency. *Id.* at 1789.

Applicants submit that the Office has failed to provide evidence in support of its inherency rejection because Applicants' specification and claims show that Form and Form-I are two different crystalline structures. For example, Form is crystalline with x-ray powder diffraction peaks selected from the group consisting of 6.20, 9.34, 12.16, 12.48, 15.06, 18.26, 18.80, 24.02, 24.46, 26.70, 27.02, 27.48, and 30.86. In contrast, Form-I is crystalline with an x-ray powder diffraction pattern comprising peaks selected from the group consisting of 6.44, 7.42, 9.28, 10.76, 11.24, 16.16, 18.60, 25.06, 28.42, and 30.40. Applicants submit that Chebiyyam's Example 40, which is a single process different from the processes of the claimed invention, cannot inherently produce both Form having one set of x-ray powder diffraction peaks and Form-I having a different set of x-ray powder diffraction peaks. For at least this reason, Applicants respectfully request favorable reconsideration.

Further, based on *Ex parte Skinner*, Applicants respectfully request evidence for each of the claimed limitations that the Office believes are inherent in the product produced by Chebiyyam's Example 40.

On a related note, Applicants respectfully direct the Office's attention to numerous decisions, which are also precedential, setting forth that new crystalline forms of old compounds are patentable and are not rendered obvious by old forms of the compound. See for example, *In re Cofer*, 148 USPQ 268 (CCPA 1966); *In re Irani*, 166 USPQ 24 (CCPA 1970); and *In re Grose*, 201 USPQ 57 (CCPA 1979).

35 U.S.C. §103

Claims 19 and 25-27 were rejected under 35 U.S.C. §103 as unpatentable over Chebiyyam. Applicants traverse these rejections. Applicants believe that the cancellation of claims 19 and 25-27 renders the Office's rejections moot, but, Applicants will address the Office's rejections to the extent that they apply to the new claims.

To establish a prima facie case of obviousness, three basic criteria must be met (MPEP 2143):

(1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;

(2) There must be a reasonable expectation of success; and

(3) The prior art reference (or references when combined) must teach or suggest all the claim limitations.

In explaining the basis for its obviousness rejections, the Office states:

> The process disclosed in Example 40 of WO'638 differs from the process recited in claim 19 by having the solvent of xylene:MeOH, and not xylene:acetonitrile. The disclosed process also differs from the process recited in claims 25-27 by different temperature range. However, xylene, MeOH and acetonitrile are known organic solvents used [in] many reaction schemes, and thus would be within the level of the skilled chemist to select to achieve desirable yield. Likewise, the difference in temperature range would also be within the level of the skilled chemist to select to obtain optimum yield.

Regarding currently cancelled claim 19, Chebiyyam's example fails to disclose or suggest, inter alia, the recited *adding of potassium tertiary butoxide at room temperature*. Chebiyyam discloses adding at 60-70° C, which represents a difference of approximately 35-45° C. Regarding currently cancelled claim 25, Chebiyyam's example fails to disclose or suggest limitations (i) and (ii). Regarding currently cancelled claim 27, Chebiyyam's example fails to disclose, inter alia, limitation (ii).

The first sentence of the first MPEP paragraph cited by the Office (Optimization Within Prior Art Conditions or Through Routine Experimentation) states: "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art **unless there is evidence indicating such concentration or temperature is critical**"(emphasis added by applicants). In the present case, Applicants' specification shows that the process of manufacturing the crystalline compound is important to achieve the recited crystalline structure of Form or Form-I. Applicants' specification clearly shows that by changing the process, different polymorphs can be achieved. Applicants are not, as suggested by the Office, changing parameters to "obtain optimum yield [in terms of amount]", Applicants are creating completely new solid-state structures, the characteristics of which are not suggested by the reference. For at least these reasons, Applicants respectfully submit that currently cancelled claims 19 and 25-27, and new claims 61-63 having similar limitations, are not rendered obvious by the reference.

Conclusion

Applicants believe that by this amendment the case is placed in condition for allowance and such action is respectfully requested. If, however, any issues remain unresolved, Applicants' representative would welcome the opportunity for a telephone interview to expedite allowance and issue.

Respectfully Submitted,

By _____

Robert Steve Thomas
Reg. No. 52,284

Attorney for Applicants
Reddy US Therapeutics, Inc.
3065 Northwoods Circle
Norcross, GA 30071-1542
Telephone No.: 678-682-9704

Date: July 26, 2007

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,399	06/13/2005	Rajender Kumar Potlapally	DRF 33-010	3144

45776 7590 01/29/2007
DR. REDDY'S LABORATORIES, INC.
200 SOMERSET CORPORATE BLVD
SEVENTH FLOOR,
BRIDGEWATER, NJ 08807-2862

Prev. F

EXAMINER	
TRUONG, TAMTHOM NGO	
ART UNIT	PAPER NUMBER
1624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

DO NOT SCAN

Office Action Summary	Application No.	Applicant(s)	
	10/507,399	POTLAPALLY ET AL.	
	Examiner	Art Unit	
	Tamthom N. Truong	1624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

Applicant's amendment of 10-5-06 has been fully considered. The amended claims and argument have not overcome the previous 102 and 103 rejections based on **Chebiyyam et. al.** (WO'638). Thus, said rejections are maintained herein.

Claims 1-15 are cancelled.

Claims 16-33 are still pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16-18, 20-24 and 28-33 remain rejected under 35 U.S.C. 102(b) as being inherently anticipated by **Chebiyyam et. al.** (WO 00/15638). The rejection is reiterated as below:

In Example 40, Chebiyyam et. al. describe a process of making the potassium salt of 5-[4-[[3-methyl-4-oxo-3,4-dihydroquinazolin-2-yl]methoxy]benzyl]thiazolidine-2,4-dione (or Glitazone). The disclosed process reads on the process recited in the instant claim 23 with solvent of xylene:MeOH, heating at temperature ~ 80°C, and potassium t-butoxide added.

Because the disclosed process is similar to the claimed process, it is presumed that the same crystal (as recited in claims 16-18 and 20-22) would be obtained. The pharmaceutical composition and method of treating diabetes are also inherently taught since Glitazone is a known andiabetic agent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 19 and 25-27 remain rejected under 35 U.S.C. 103(a) as being unpatentable over **Chebiyyam et. al.** (WO 00/15638).

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The rejection is reiterated as below:

The process disclosed in Example 40 of WO'638 differs from the process recited in claim 19 by having the solvent of xylene:MeOH, and not xylene:acetonitrile. The disclosed process also differs from the process recited in claims 25-27 by different temperature range. However, xylene, MeOH and acetonitrile are known organic solvents used many reaction schemes, and thus would be within the level of the skilled chemist to select to achieve desirable yield. Likewise, the difference in temperature range would also be within the level of the skilled chemist to select to obtain optimum yield.

Note, the following excerpt from MPEP, Chapter 2100:

Optimization Within Prior Art Conditions or Through Routine Experimentation
Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. Denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

2144.07 Art Recognized Suitability for an Intended Purpose
The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical

Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol. "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.).
See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.).

Thus, at the time that the invention was made, it would have been obvious to develop a process of making potassium salt of Glitazone in view of the teaching above.

Response to Argument

Regarding the 102 rejection, applicant contended that Example 40 of WO'638 does not disclose every limitation of the rejected claims. However, Example 40 explicitly describes the K^+ salt of Glitazone, or the instantly claimed salt. Thus, the crystalline form of said salt is **inherently** anticipated. See **In re Best**, 195 USPQ 430,433 (CCPA 1977) regarding the discovery of an unknown property which is inherently present in the prior art. See also the following excerpt from MPEP:

> "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). >In *In re Crish*, 393 F.3d 1253, 1258, 73 USPQ2d 1364, 1368 (Fed. Cir. 2004), the court held that the claimed promoter sequence obtained by sequencing a prior art plasmid that was not previously sequenced was anticipated by the prior art plasmid which necessarily possessed the same DNA sequence as the claimed oligonucleotides. The court stated that "just as the discovery of properties of a known material does not make it novel, the identification and characterization of a prior art material also does not make it novel." *Id.*< See also MPEP § 2112.01 with regard to inherency and product-by-process claims and MPEP § 2141.02 with regard to inherency and rejections under 35 U.S.C. 103.

It is noted that claims 23, 25 and 27 have been amended with new temperature range. However, the adjustment of temperature would have been within the level of one skilled in the art, and thus, said claims would have been obvious in view of Example 40.

Applicant cited *Ex parte Havens*, which is an unpublished decision, and thus cannot serve as legal precedent.

Regarding the 103 rejection, the choice of solvents and temperature range would have been within the level of the skilled chemist for optimum yield and intended purpose as stated in the MPEP 2144.07 (cited above).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamthom N. Truong whose telephone number is 571-272-0676. The examiner can normally be reached on M, T and Th (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 571-272-0661. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tamthom N. Truong
Examiner
Art Unit 1624

***

1-18-07

JAMES O. WILSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600